

WHAT IS CLAIMED IS:

1. A composition comprising a liquid metal, a particulate filler, and a resin, wherein said liquid metal and particulate filler are present in a ratio of about 2:1 to about 1:10.
2. The composition of claim 1, wherein the liquid metal is selected from the group consisting of gallium, indium, mercury, metallic glasses, and alloys and combinations and mixtures thereof.
3. The composition of claim 2, wherein the liquid metal is selected from the group consisting of gallium, gallium alloys, and mixtures thereof.
4. The composition of claim 1, wherein the particulate filler is selected from the group consisting of metal oxides, metal nitrides, coated metallic particles, and coated ceramic particles.
5. The composition of claim 1, wherein the particulate filler is selected from the group consisting of aluminum oxide, aluminum nitride, boron nitride, graphite, carbon nanotubes, diamond, magnesium oxide, zinc oxide, zirconium oxide, titanium oxide, chromium oxide, silica coated aluminum nitride, glass coated silver, alumina coated silver, alumina coated aluminum and combinations and mixtures thereof.
6. The composition of claim 1, wherein said particulate filler is aluminum oxide.
7. The composition of claim 1, wherein said resin comprises at least one of silicone resin, epoxy resin, acryloxy resin, and combinations and mixtures thereof.
8. The composition of claim 7, wherein said resin comprises a silicone resin and said silicone resin is an addition curable silicone resin.
9. The composition of claim 1 further comprising an adhesion promoter.
10. The composition of claim 9 wherein the adhesion promoter is selected from the group consisting of alkoxysilanes, aryloxysilanes, alkoxysiloxane, and aryloxysiloxane.

11. The composition of claim 1, wherein the liquid metal and particulate filler are present in a combined amount of about 20 to about 95 weight %.
12. The composition of claim 11, wherein the liquid metal and particulate filler are present in a combined amount of about 60 to about 95 weight %.
13. The composition of claim 1 further comprising a catalyst.
14. An electronic component comprising the composition of claim 1.
15. A composition comprising a liquid metal selected from the group consisting of gallium, gallium alloys, and mixtures thereof, an aluminum oxide particulate filler, and a silicone resin, wherein said liquid metal and particulate filler are present in a ratio of about 2:1 to about 1:10.
16. A method of increasing heat transfer comprising the steps of  
  
                    positioning a heat producing component in contact with a thermal interface composition comprising a liquid metal, a particulate filler, and a resin, wherein said liquid metal and particulate filler are present in a ratio of about 2:1 to about 1:10; and  
  
                    positioning a heat dissipating unit in contact with the thermal interface composition.
17. The method according to claim 16, wherein the step of positioning the heat dissipating unit in contact with a thermal interface composition comprises positioning a heat dissipating unit selected from the group consisting of heat spreaders, heat sinks, lids, and heat pipes.
18. The method according to claim 16, wherein the step of positioning heat producing component in contact with a thermal interface composition further comprises positioning a thermal interface composition selected from the group consisting of pre-formed sheets, films and greases in contact with the heat producing component.

19. The method according to claim 16, wherein said liquid metal is selected from the group consisting of gallium, indium, mercury, metallic glasses, and combinations thereof.

20. The method according to claim 16, wherein said particulate filler comprises thermally conducting materials selected from the group consisting of aluminum oxide, aluminum nitride, boron nitride, diamond, graphite, carbon nanotubes, magnesium oxide, zinc oxide, zirconium oxide, titanium oxide, chromium oxide, silica coated aluminum nitride, glass coated silver, alumina coated silver, alumina coated aluminum and combinations and mixtures thereof.

21. The method according to claim 20, wherein said particulate filler is aluminum oxide.

22. The method according to claim 15, wherein said curable resin is selected from the group consisting of a silicone resin, epoxy resin, acryloxy resin, and combinations and mixtures thereof.

23. An electronic component comprising a heat producing component, a heat dissipating component, and a thermal interface composition interposed between the heat producing component and the heat dissipating unit, the thermal interface composition comprising a liquid metal, a particulate filler, and a resin, wherein said liquid metal and particulate filler are present in a ratio of about 2:1 to about 1:10.

24. The electronic component of claim 23, wherein said liquid metal is selected from the group consisting of gallium, indium, mercury, metallic glasses, and combinations thereof.

25. The electronic component of claim 24, wherein said particulate filler comprises thermally conducting materials selected from the group consisting of aluminum oxide, aluminum nitride, boron nitride, diamond, graphite, carbon nanotubes, magnesium oxide, zinc oxide, zirconium oxide, titanium oxide, chromium oxide, silica coated aluminum nitride, silica coated silver, alumina coated silver, alumina coated aluminum and combinations and mixtures thereof.

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26. The electronic component of claim 23, wherein said resin comprises at least one of silicone resin, epoxy resin, acryloxy resin, and combinations and mixtures thereof.